

REMARKS**Claim Rejections - 35 U.S.C. §102**

The Examiner has rejected claim 11 under 35 U.S.C. 102(e) as being anticipated by Cheung et al. (U.S. Patent No.: 6,287,990). The Applicant respectfully traverses. Cheung does not anticipate the Applicant's invention because Cheung does not teach all elements of claim 11. Claim 11 is as follows:

*11. A substrate processing system comprising:
a housing defining a process chamber;
a substrate holder, located within said process chamber, for holding a silicon substrate which includes a silicon trench formed between upper portions and having a trench bottom and a trench wall;
a gas delivery system for introducing process gases into said process chamber;
a controller for controlling said gas delivery system; and
a memory coupled to said controller comprising a computer-readable medium having a computer-readable program embodied therein for directing operation of said controller, said computer-readable program including a set of instructions to control said gas delivery system to introduce a process gas including ozone and a precursor into said process chamber to form a dielectric layer on said silicon substrate, said precursor providing deposition rate dependence of said dielectric layer on differently constituted surfaces at different levels comprising said trench bottom and a material on said upper portions of said silicon substrate, and to adjust an ozone/precursor ratio between said ozone and said precursor until said dielectric layer develops a substantially planar dielectric surface.*

Cheung does not teach the last highlighted element of claim 11. Specifically, Cheung does not teach a computer-readable program including instructions to control process gases including ozone and a precursor to form a dielectric layer where the precursor provides a deposition rate dependence on differently constituted surfaces and where the computer readable program includes instructions to adjust an ozone/precursor ratio between said ozone and said precursor until said dielectric layer develops a substantially planar dielectric surface. Therefore, Cheung does not anticipate claim 11.

Claim Rejections – 35 U.S.C. §103

The Examiner has rejected claims 1-10 and 16-27 under 35 U.S.C. 103(a) as being unpatentable over Tsai et al. (U.S. Patent No.: 5,930,644) in view of Oh (U.S. Patent No.: 6,372,606). The Applicant respectfully traverses. The elements of claims 1-10 and claims 16-27 are not all taught by Tsai in view of Oh. Claim 1 is as follows:

1. *A method comprising:
providing a silicon substrate in a substrate processing chamber, said silicon substrate having upper portions;
forming a trench in said silicon substrate between said upper portions, said trench having a trench bottom and a trench wall;
introducing a precursor, preferably TEOS, into said substrate processing chamber to form a dielectric layer over said silicon substrate, the precursor providing a deposition rate dependence of said dielectric layer on differently constituted surfaces at different levels on said substrate, said differently constituted surfaces at different levels comprising said trench bottom and a material on said upper portions;
flowing ozone into said substrate processing chamber to react with said precursor to deposit a dielectric layer over said substrate; and
adjusting an ozone/precursor ratio between said ozone and said precursor to regulate deposition rates of said dielectric layer on said differently constituted surfaces until said dielectric layer develops a substantially planar dielectric surface.*

Neither Tsai nor Oh teach the element in claim 1 of “adjusting an ozone/precursor ratio between said ozone and said precursor to regulate deposition rates of said dielectric layer on said differently constituted surfaces until said dielectric layer develops a substantially planar dielectric surface.” An ozone/precursor ratio to regulate the deposition rate of a dielectric layer and to regulate the formation of a substantially planar dielectric surface are not discussed in either Tsai or Oh. Claims 2-10 are dependent on claim 1 and hence incorporate all limitations of claim 1. Therefore, claims 1-10 are not obvious in light of Tsai in view of Oh.

Claim 16 is as follows:

16. *A method for forming a trench isolation structure on a silicon substrate, the method comprising the steps of:*
applying a CVD anti-reflective coating on and contacting said silicon substrate;
forming a photoresist on said CVD anti-reflective coating;
exposing a portion of said photoresist to a light to define a location where a trench is to be formed;
removing said photoresist at said location; and
etching, at said location, through said CVD anti-reflective coating and through a depth of said substrate to form said trench at said location.

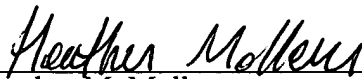
Neither Tsai nor Oh teach the element in claim 16 of “applying a CVD anti-reflective coating on and contacting said silicon substrate.” In contrast, Tsai teaches forming an anti-reflective coating (ARC) on a silicon oxide pad layer, and Oh teaches forming an ARC on a high temperature oxidation layer that is formed over a nitride layer and a pad oxide layer. Therefore, the combination of Tsai and Oh does not teach Claim 16. Claims 17-27 are dependent on claim 16 and incorporate all of the limitations of claim 17. Therefore claims 16-27 are not obvious in light of Tsai in view of Oh.

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Respectfully submitted,

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